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TECHNOLOGY GROUP

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with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

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- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

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Find the *UniPower TPCH92332-SZ-440* at our website: *Click HERE*

UNIPOWER
Powering Technology

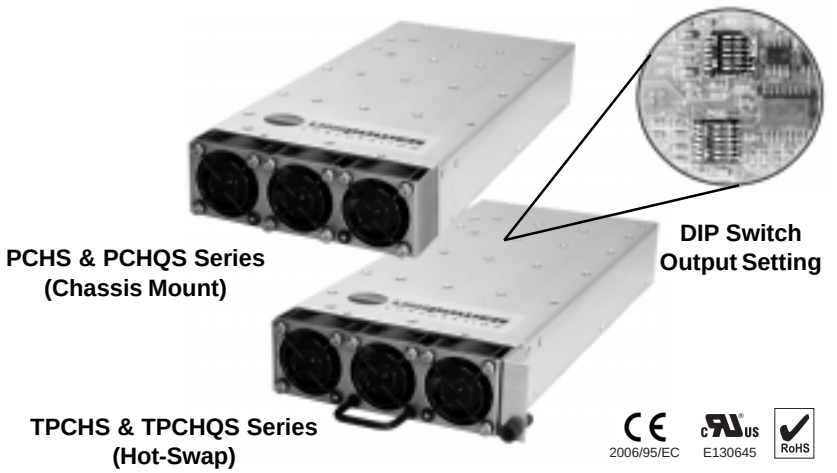
QUICK-SET *PowerCassette*®: MULTI-OUTPUT SWITCHER

1U High, Up to 6 Outputs at 600 Watts, AC or DC Input
Outputs Instantly Set at Factory

FEATURES

- Outputs Set by DIP Switches
- Advanced "CellularPower"™ Architecture
- Up to 5 Outputs Plus 5V, ¼ A Standby
- 508 Different Models
- Hot-Swap or Chassis Mount Versions
- 1.8 to 12VDC Outputs
- AC or DC Input
- I2C Serial Data Bus Option
- Integral LED Status Indicators
- 6.8 Watts/Cubic Inch Power Density
- Power Factor Corrected (AC Input)
- Low Profile: 1.6 Inches High (1U)
- Hot-Swappable Connector
- Staged Pin Lengths
- ORing Diodes on All Outputs
- Two- or Three-Unit 19" Racks*
- Active Current Sharing on V1, V2 & V3
- Universal 85 to 264VAC Input
- Class B EMI Input Filter
- Wide Range 36 to 72 VDC Input
- DC Input Reverse Polarity Protected
- Optimized Thermal Management
- No Minimum Load, Any Output
- Control & Monitoring Features

*For TPCHS Models

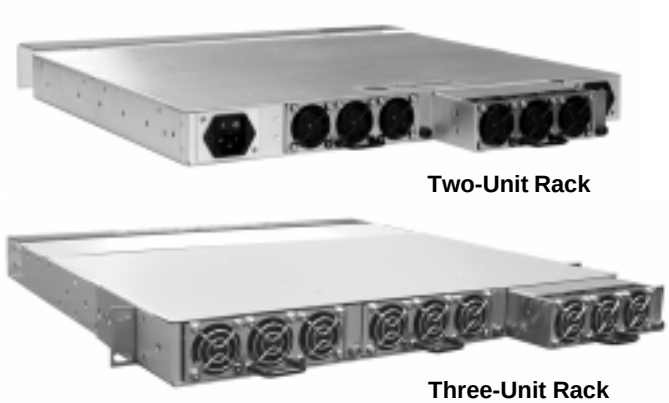


PCHS & PCHQS Series (Chassis Mount)

DIP Switch Output Setting

TPCHS & TPCHQS Series (Hot-Swap)

CE 2006/95/EC cULus E130645 RoHS



Two-Unit Rack

Three-Unit Rack

Patents Issued & Pending

TWO-YEAR WARRANTY

SAFETY CERTIFICATIONS

AGENCY	STANDARD
UL	UL1950
CUL	CSA22.2, No. 950
DEMKO	EN60950

ORDERING GUIDE

SERIES	AC or DC INPUT	V1 OUTPUT	I2C OUTPUT	V1 to V5 OUTPUTS
PCH = Chassis Mount TPCH = Hot Swap	Q = DC B* = AC	29332-S = 1.8-5V Out 32332-S = 12V Out	Z = I2C B* = No I2C	Use 5 Letters From Tables: -XXXXX (Pages 3 & 4)

NOTE: B* means "leave blank" (no letter)

Examples: **Model TPCH29332-S-DBFGE** is a Hot-Swap version with AC input, no I2C, V1 = 5V/70A, V2 = 2.5V/50A, V3 = 12V/10A, V4 = -12V/3A and V5 = -5V/3A

Model PCHQ32332-SZ-FCOGE is a Chassis Mount version with DC input, I2C output, V1 = 12V/35A, V2 = 3.3V/50A, V3 = No Output, V4 = -12V/3A and V5 = -5V/3A

Two-and Three-Unit Racks: For ordering information on these racks, see data sheet on "Multi-Output PowerCassette® 19-Inch Racks".

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SPECIFICATIONS QUICK-SET *PowerCassette*® PCHS & TPCHS SERIES

Typical at Nominal 115/230VAC Line or 48VDC, Full Load and 25°C Unless Otherwise Noted.

OUTPUT SPECIFICATIONS

Total Output Power, Continuous, Max ..... 600 Watts
Voltage Adjustment Range, Min. ..... ±5%
Total Regulation[1], V1, V2, V3 ..... 2.0%
Total Regulation[1], V4, V5, ... 3.0%
Ripple & Noise, Pk-Pk[2] ..... 1% or 50mV
Holdup Time 20mS
Dynamic Response[3] 300µS
Temperature Coefficient ..... ±0.02%/°C
Minimum Load, Any Output 0A
Overload Protection ..... Auto Recovery
Overvoltage Protection, V1, V2, V3 ..... Latched Shutdown
Remote Sense, V1, V2, V3 ..... Up to 0.25V Per Wire
Current Share, V1, V2, V3 ..... ±10% Full Load Rating
Standby Output ..... +5V, 250mA
Output Power Good Signal ..... Logic High
Input Power Fail Signal ..... Logic High
Global Inhibit ..... Logic Low
Enable ..... Logic Low
Thermal Warning ..... Logic Low

AC INPUT SPECIFICATIONS

Input Voltage Range 85-264VAC
Power Factor 0.99
Input Frequency 47-63Hz
Inrush Current Limiting ..... 30A Peak
Input EMI Filter[6] ..... EN55022 Curve B
FCC20780 pt. 15J Curve B
Harmonic Distortion EN61000-3-2
Input Immunity, Conducted
Fast Transients, Line-Line ..... ±2kV (EN61000-4-4 Level 3)
Surges, Line-Line ..... ±2kV (EN61000-4-5 Level 3)
Surges, Line-Ground ..... ±4kV (EN61000-4-5 Level 4)
Input Protection ..... Internal Fuse, 15A

DC INPUT SPECIFICATIONS

Input Voltage Range 36-72VDC
Inrush Current Limiting ..... 10A Peak
Input EMI Filter ..... Standard
Input Immunity, Conducted
Fast Transients, Line-Line ..... ±2kV (EN61000-4-4 Level 3)
Surges, Line-Line ..... ±500V (EN61000-4-5 Level 1)
Surges, Line-Ground ..... ±500V (EN61000-4-5 Level 1)
Input Protection ..... Internal Fuse, 25A

GENERAL SPECIFICATIONS

Efficiency[4] ..... 75% at Full Load
Switching Frequency, PFC Converter (AC Input) 48-110kHz
Output Converters ..... 275kHz Nominal
Isolation, Class I, min.[5]
Input-Output (AC Input/DC Input) 3000VAC/1500VDC
Input-Ground (AC Input/DC Input) 1500VAC/1500VDC
Output-Ground (AC Input/DC Input) 50VDC/50VDC

MTBF (Bellcore) ..... 200,000 Hours
Safety Standards EN60950, UL1950, CSA22.2 No.950

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature ..... 0°C to 70°C Ambient
Derating ..... 2.5% / °C, 50°C to 70°C
Storage Temperature ..... -40°C to +85°C
Cooling ..... Integral Ball Bearing Fans

PHYSICAL SPECIFICATIONS

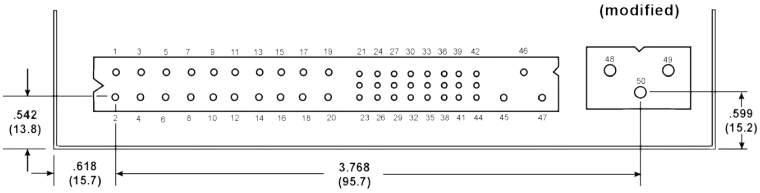
Case Material ..... Aluminum
Dimensions, Inches(mm) ..... 1.6 H x 5.0 W x 11.0 D
(40.6 x 127 x 279)
Weight ..... 3.3 lbs. (1.5 kg.)

NOTES:

1. No load to full load, including line regulation and load regulation.
2. Whichever is greater. 20MHz bandwidth. Measure with 0.1µF ceramic and 10µF tantalum capacitors in parallel across the output. For outputs of 2.5V or lower, the figure is 2% maximum.
3. <4% deviation recovering to within 1% for 25% load change.
4. Typical efficiency for 4 output unit with one high-current output of 5V or lower. Efficiency can vary 5% or more depending on combination of outputs.
5. Input-output isolation figure is for isolation components only. 100% production Hipot tested.
6. When installed in compatible rack. Consult factory.

CONNECTOR: POSITRONICS PCIH47M400A1

DC INPUT ONLY
PLB-3W3M400A-1
(modified)



PIN STAGING	
PINS	LENGTH
1-20	.300"
21-26	.250"
27	.150"
28-44	.250"
45-47	.450"
48-5-	.250"

MATING INTERFACE BOARD	MATING CONNECTOR KIT
For Single PCHS/TPCHS PowerCassette (AC or DC) Order No. 009-3708-0000	**AC Input:** Order Kit No. 775-1429-0000 **DC Input:** Order Kit No. 775-1445-0000

ALL DIMENSIONS IN INCHES (mm). All specifications subject to change without notice.

PIN CONNECTIONS			
PIN	FUNCTION	PIN	FUNCTION
1	+V1 Out	26	+5V, 250mA Standby
2	+V1 Out	27	Enable*
3	+V1 Out	28	Spare/ADD GA1*
4	+V1 Out	29	V1 External Trim
5	+V1 Out	30	+V1 Sense
6	+V1 Out	31	-V1 Sense
7	V1 & V2 Return	32	V2 External Trim
8	V1 & V2 Return	33	+V2 Sense
9	V1 & V2 Return	34	-V2 Sense
10	V1 & V2 Return	35	V1 Current Share
11	V1 & V2 Return	36	+V3 Sense
12	V1 & V2 Return	37	-V3 Sense
13	V1 & V2 Return	38	Output Power Good/SDA*
14	+V2 Out	39	Global Inhibit
15	+V2 Out	40	Overtemp. Warning/SCLK*
16	+V2 Out	41	V2 Current Share
17	+V2 Out	42	Input Power Fail
18	+V2 Out	43	Spare/Interrupt*
19	V3 Return	44	V3 Current Share
20	+V3 Out	45	Chassis Ground
21	V4 Out	46	AC Line
22	Signal Ground	47	AC Neutral
23	V5 Out	48	+DC Input
24	V4 & V5 Return	49	-DC Input
25	Spare/ADD GA0*	50	Chassis Ground

***NOTES:** For unit to operate, pin 27 must be at logic LO or shorted to pin 22. Pins 25, 28, 38, 40 and 43 function as I2C outputs when that option is present. All returns and signal ground are connected together.

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QUICK-SET *PowerCassette*® MODEL SUFFIX SELECTOR

V1	V2	V3	V4	V5	MODEL SUFFIX
12V/35A	2.5V/50A		-12V/3A	-5V/3A	FBOGE
12V/35A	2.5V/50A		-12V/3A	5V/3A	FBOGD
12V/35A	2.5V/50A			-5V/3A	FBOOE
12V/35A	2.5V/50A		-12V/3A	-5.2V/3A	FBOGK
12V/35A	2.5V/50A	5V/10A		1.8/3A	FBJOA
12V/35A	2.5V/50A	5V/10A			FBJOO
12V/35A	3.3V/50A		-12V/3A	-5V/3A	FCOGE
12V/35A	3.3V/50A		-12V/3A	5V/3A	FCOGD
12V/35A	3.3V/50A			-5V/3A	FCOOE
12V/35A	3.3V/50A		-12V/3A	-5.2V/3A	FCOGK
12V/35A	3.3V/50A	5V/10A		1.8V/3A	FCJOA
12V/35A	3.3V/50A	5V/10A			FCJOO
12V/35A	5V/50A		-12V/3A	-5V/3A	FDOGE
12V/35A	5V/50A		-12V/3A	3.3V/3A	FDOGC
12V/35A	5V/50A		-12V/3A	2.5V/3A	FDOGB
12V/35A	5V/50A		-12V/3A	-5.2V/3A	FDOGK
12V/35A	5V/50A		-12V/3A		FDOGO
12V/35A	5V/50A				FDOOO
5V/70A	3.3V/50A	12V/10A	-12V/3A	-5V/3A	DCFGE
5V/70A	3.3V/50A	12V/10A	-12V/3A		DCFGO
5V/70A	3.3V/50A	12V/10A		2.5V/3A	DCFOB
5V/70A	3.3V/50A		-12V/3A	1.8V/3A	DCOGA
5V/70A	3.3V/50A		-12V/3A	-5V/3A	DCOGE
5V/70A	3.3V/50A	12V/10A	-12V/3A	2.5V/3A	DCFGB
5V/70A	3.3V/50A				DCOOO
5V/70A	3.3V/50A	12V/10A		-5V/3A	DCFOE
5V/70A	3.3V/50A		12V/3A	-5V/3A	DCOFE
5V/70A	3.3V/50A		12V/3A	2.5V/3A	DCOFB
5V/70A	3.3V/50A			2.5V/3A	DCOOB
5V/70A	3.3V/50A	12V/10A		-5.2V/3A	DCFOK
5V/70A	2.5V/50A	12V/10A	-12V/3A	-5V/3A	DBFGE
5V/70A	2.5V/50A		-12V/3A	3.3V/3A	DBOGC
5V/70A	2.5V/50A	12V/10A		2.5V/3A	DBFOB
5V/70A	2.5V/50A	12V/10A		-5V/3A	DBFOE
5V/70A	2.5V/50A		-12V/3A		DBOGO
5V/70A	2.5V/50A			-5V/3A	DBOOE
5V/70A	2.5V/50A		12V/3A	3.3V/3A	DBOFC
5V/70A	2.5V/50A	12V/10A	-12V/3A	2.5V/3A	DBFGB
5V/70A	2.5V/50A		-12V/3A	-5V/3A	DBOGE
5V/70A	2.5V/50A		12V/3A	1.8V/3A	DBOFA
5V/70A	2.5V/50A		-12V/3A	1.8V/3A	DBOGA
5V/70A		12V/10A	-12V/3A	-5V/3A	DOFGE
5V/70A		12V/10A	-12V/3A	3.3V/3A	DOFGC
5V/70A		12V/10A		2.5V/3A	DOFOB
5V/70A		12V/10A		3.3V/3A	DOFOC
5V/70A		12V/10A			DOFOO
5V/70A			-12V/3A	2.5V/3A	DOOGB
5V/70A		12V/10A	-12V/3A		DOFGO
5V/70A		12V/10A		-5V/3A	DOFOE
5V/70A			-12V/3A	1.8V/3A	DOOGA
5V/70A			-12V/3A	3.3V/3A	DOOGC
5V/70A				-5V/3A	DOOGE
5V/70A				3.3V/3A	DOOOC
5V/70A				2.5V/3A	DOOOB
5V/70A				1.8V/3A	DOOOA
5V/70A			12V/3A	1.8V/3A	DOOFA
5V/70A			12V/3A	2.5V/3A	DOOFB
5V/70A			12V/3A	3.3V/3A	DOOFC
5V/70A			12V/3A		DOOFO
5V/70A				-5.2V/3A	DOOOK
5V/70A				-5V/3A	DOOOE
5V/100A		12V/10A	-12V/3A	-5V/3A	LDFGE
5V/100A		12V/10A	-12V/3A	3.3V/3A	LDFGC
5V/100A		12V/10A		2.5V/3A	LDFOB
5V/100A			12V/3A	-5V/3A	LDOFE
5V/100A			-12V/3A	2.5V/3A	LDOGB
5V/100A		12V/10A	-12V/3A		LDFGO
5V/100A		12V/10A		-5V/3A	LDFOE
5V/100A			-12V/3A	3.3V/3A	LDOGC
5V/100A			-12V/3A	-5V/3A	LDOGE
5V/100A		12V/10A		3.3V/3A	LDFOC
5V/100A		12V/10A		-5.2V/3A	LDFOK
3.3V/70A	5V/50A	12V/10A	-12V/3A	-5V/3A	CDFGE
3.3V/70A		12V/10A	-12V/3A	5V/3A	COFGD
3.3V/70A	5V/50A	12V/10A	-12V/3A		CDFGO
3.3V/70A	5V/50A			-5V/3A	CDOOE
3.3V/70A	5V/50A		-12V/3A	1.8V/3A	CDOGA
3.3V/70A		12V/10A		2.5V/3A	COFOB
3.3V/70A	5V/50A	12V/10A	-12V/3A	2.5V/3A	CDFGB
3.3V/70A	5V/50A			2.5V/3A	CDOOB
3.3V/70A	5V/50A		12V/3A	2.5V/3A	CDOFB
3.3V/70A			-12V/3A	2.5V/3A	COOGB
3.3V/70A	2.5V/50A	12V/10A	-12V/3A	-5V/3A	CBFGE
3.3V/70A	2.5V/50A	12V/10A	-12V/3A		CBFGO
3.3V/70A	2.5V/50A	12V/10A		-5V/3A	CBFOE
3.3V/70A	2.5V/50A			-5V/3A	CBOOE
3.3V/70A	2.5V/50A		12V/3A	-5V/3A	CBOFE
3.3V/70A	2.5V/50A		12V/3A	5V/3A	CBOFD
3.3V/70A	2.5V/50A	12V/10A		5V/3A	CBFOD
3.3V/70A	2.5V/50A	5V/10A		-5.2V/3A	CBJOO
3.3V/70A	2.5V/50A	12V/10A	-12V/3A		CBFGK
3.3V/70A	2.5V/50A	5V/10A		1.8V/3A	CBJOA
3.3V/70A	2.5V/50A		12V/3A	1.8V/3A	CBOFA
3.3V/70A	2.5V/50A	12V/10A	-12V/3A	1.8V/3A	CBFGA
3.3V/70A		12V/10A	-12V/3A	-5V/3A	COFGE
3.3V/70A		12V/10A	-12V/3A		COFGO
3.3V/70A		12V/10A		-5V/3A	COFOE
3.3V/70A		12V/10A		5V/3A	COFOD
3.3V/70A		12V/10A		1.8V/3A	COFOA
3.3V/70A				2.5V/3A	COOOB
3.3V/70A		12V/10A	-12V/3A	-5.2V/3A	COFGK
3.3V/70A		12V/10A	-12V/3A	2.5V/3A	COFGB
3.3V/70A		12V/10A			COFOO
3.3V/70A		5V/10A			COJOO
3.3V/70A		5V/10A		1.8V/3A	COJOA
3.3V/70A		12V/10A		-5.2V/3A	COFOK
2.5V/70A	5V/50A	12V/10A	-12V/3A	-5V/3A	BDFGE
2.5V/70A	5V/50A	12V/10A	-12V/3A	3.3V/3A	BDFGC
2.5V/70A	5V/50A	12V/10A		2.5V/3A	BDFOB
2.5V/70A	5V/50A		12V/3A	-5V/3A	BDOFE
2.5V/70A	5V/50A		-12V/3A	3.3V/3A	BDOGC
2.5V/70A	5V/50A		12V/3A	1.8V/3A	BDOFA
2.5V/70A	5V/50A		-12V/3A	1.8V/3A	BDOGA
2.5V/70A	5V/50A		-12V/3A		BDOGO
2.5V/70A	5V/50A	12V/10A			BDFOO
2.5V/70A	5V/50A	12V/10A		-5V/3A	BDFOE
2.5V/70A	5V/50A	12V/10A		3.3V/3A	BDFOC
2.5V/70A	5V/50A			3.3V/3A	BDOOC
2.5V/70A	3.3V/50A	12V/10A	-12V/3A	5V/3A	BCFGD
2.5V/70A	3.3V/50A	12V/10A	-12V/3A	3.3V/3A	BCFGC
2.5V/70A	3.3V/50A	12V/10A		2.5V/3A	BCFOB
2.5V/70A	3.3V/50A		12V/3A	-5V/3A	BCOFE
2.5V/70A	3.3V/50A		12V/3A	5V/3A	BCOFD
2.5V/70A	3.3V/50A	12V/10A	-12V/3A	-5.2V/3A	BCFGK
2.5V/70A	3.3V/50A	5V/10A		1.8V/3A	BCJOA
2.5V/70A	3.3V/50A			-5V/3A	BCOOE
2.5V/70A	3.3V/50A		-12V/3A	1.8V/3A	BCOGA
2.5V/70A	3.3V/50A		-12V/3A	-5V/3A	BCOGE
2.5V/70A	3.3V/50A	12V/10A	-12V/3A	-5V/3A	BCFGE
2.5V/70A	3.3V/50A	12V/10A	-12V/3A		BCFGO

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QUICK-SET *PowerCassette*® MODEL SUFFIX SELECTOR (CONTINUED)

V1	V2	V3	V4	V5	MODEL SUFFIX
2.5V/70A			-12V/3A	-5V/3A	BOOGE
2.5V/70A			12V/3A	3.3V/3A	BOOFC
2.5V/70A			-12V/3A	5V/3A	BOOGD
2.5V/70A			12V/3A		BOOFO
2.5V/70A			-12V/3A	3.3V/3A	BOOGC
2.5V/70A			12V/3A	5V/3A	BOOFD
2.5V/70A			12V/3A	1.8V/3A	BOOFA
2.5V/70A			-12V/3A	1.8V/3A	BOOGA
2.5V/70A				1.8V/3A	BOOOA
2.5V/70A			-12V/3A		BOOGO
2.5V/70A			12V/3A	-5V/3A	BOOFE
2.5V/70A				-5V/3A	BOOOE
2.5V/70A				5V/3A	BOOOD
1.8V/70A	3.3V/50A	12V/10A	-12V/3A	-5V/3A	ACFGE
1.8V/70A	3.3V/50A	12V/10A	-12V/3A	3.3V/3A	ACFGC
1.8V/70A	3.3V/50A	12V/10A		2.5V/3A	ACFOB
1.8V/70A	3.3V/50A		12V/3A	-5V/3A	ACOFE
1.8V/70A	3.3V/50A		12V/3A	3.3V/3A	ACOFC
1.8V/70A	3.3V/50A			5V/3A	ACOOD
1.8V/70A	3.3V/50A		-12V/3A		ACOGO
1.8V/70A	3.3V/50A		12V/3A	2.5V/3A	ACOFB
1.8V/70A	3.3V/50A		12V/3A	5V/3A	ACOFD
1.8V/70A	3.3V/50A	12V/10A	-12V/3A	-5.2V/3A	ACFGK
1.8V/70A	3.3V/50A		12V/3A		ACOFO
1.8V/70A	3.3V/50A	5V/10A			ACJOO
1.8V/70A	3.3V/50A			2.5V/3A	ACOOB
1.8V/70A	3.3V/50A		-12V/3A	2.5V/3A	ACOGB
3.3V/70A			12V/3A	5V/3A	COOFD
3.3V/70A			-12V/3A	-5V/3A	COOGE
3.3V/70A			-12V/3A	5V/3A	COOGD
3.3V/70A			12V/3A	-5V/3A	COOFE
3.3V/70A				5V/3A	COOOD
3.3V/70A			12V/3A		COOFO
3.3V/70A				-5.2V/3A	COOOK
3.3V/70A			12V/3A	2.5V/3A	COOFB
3.3V/70A			-12V/3A	-5.2V/3A	COOGK
3.3V/70A			12V/3A	1.8V/3A	COOFA
3.3V/70A			-12V/3A	1.8V/3A	COOGA
2.5V/100A		12V/10A	-12V/3A	5V/3A	NBFGD
2.5V/100A		12V/10A			NBFOO
2.5V/100A		12V/10A		-5V/3A	NBFOE
2.5V/100A		12V/10A	-12V/3A	3.3V/3A	NBFGC
2.5V/100A			-12V/3A	3.3V/3A	NBOGC
2.5V/100A		12V/10A	-12V/3A		NBFGO
2.5V/100A			-12V/3A	1.8V/3A	NBOGA
2.5V/100A			12V/3A	1.8V/3A	NBOFA
2.5V/100A			12V/3A	3.3V/3A	NBOFC
2.5V/100A		5V/10A			NBJOO
2.5V/100A		5V/10A		1.8V/3A	NBJOA
2.5V/100A			12V/3A		NBOFO
2.5V/100A		12V/10A	-12V/3A	-5.2V/3A	NBFGK
2.5V/100A		12V/10A		5V/3A	NBFOD
1.8V/70A			-12V/3A	-5V/3A	AOOGE
1.8V/70A			-12V/3A	2.5V/3A	AOOGB
1.8V/70A			12V/3A	2.5V/3A	AOOFB
1.8V/70A			-12V/3A	3.3V/3A	AOOGC
1.8V/70A			12V/3A	-5V/3A	AOOFE
1.8V/70A			-12V/3A	5V/3A	AOOGD
1.8V/70A		5V/10A			AOJOO
1.8V/70A			12V/3A	3.3V/3A	AOOFC
1.8V/70A			12V/3A		AOOFO
1.8V/70A			-12V/3A	-5.2V/3A	AOOGK

V1	V2	V3	V4	V5	MODEL SUFFIX
1.8V/70A	5V/50A	12/10A	-12V/3A	-5V/3A	ADFGE
1.8V/70A	5V/50A	12/10A	-12V/3A		ADFGO
1.8V/70A	5V/50A	12/10A		-5V/3A	ADFOE
1.8V/70A	5V/50A	12/10A			ADFOO
1.8V/70A	5V/50A	12/10A		2.5V/3A	ADFOB
1.8V/70A	5V/50A	12/10A	-12V/3A	3.3V/3A	ADFGC
1.8V/70A	5V/50A		-12V/3A	2.5V/3A	ADOGB
1.8V/70A	5V/50A	12/10A	-12V/3A	2.5V/3A	ADFGB
1.8V/70A	5V/50A		12V/3A	3.3V/3A	ADOFC
1.8V/70A	5V/50A				ADOOO
1.8V/70A	5V/50A			3.3V/3A	ADOOC
1.8V/70A	5V/50A			2.5V/3A	ADOOB
1.8V/70A	5V/50A			-5V/3A	ADOOE
1.8V/70A	2.5V/50A	12V/10A	-12V/3A	-5V/3A	ABFGE
1.8V/70A	2.5V/50A	12V/10A	-12V/3A		ABFGO
1.8V/70A	2.5V/50A	12V/10A			ABFOO
1.8V/70A	2.5V/50A	12V/10A		5V/3A	ABFOD
1.8V/70A	2.5V/50A	12V/10A		-5V/3A	ABFOE
1.8V/70A	2.5V/50A		-12V/3A	-5V/3A	ABOGE
1.8V/70A	2.5V/50A	12V/10A		3.3V/3A	ABFOC
1.8V/70A	2.5V/50A	12V/10A	-12V/3A	3.3V/3A	ABFGC
1.8V/70A	2.5V/50A		12V/3A	3.3V/3A	ABOFC
1.8V/70A	2.5V/50A	5V/10A			ABJOO
1.8V/70A	2.5V/50A		12V/3A	5V/3A	ABOFD
1.8V/70A	2.5V/50A			3.3V/3A	ABOOC
1.8V/70A	2.5V/50A	12V/10A	-12V/3A	-5.2V/3A	ABFGK
1.8V/70A	2.5V/50A			5V/3A	ABOOD
3.3V/100A		12V/10A	-12V/3A	-5V/3A	MCFGE
3.3V/100A		12V/10A	-12V/3A		MCFGO
3.3V/100A		12V/10A		-5V/3A	MCFOE
3.3V/100A		12V/10A			MCFOO
3.3V/100A		12V/10A	-12V/3A	-5.2V/3A	MCFGK
3.3V/100A		12V/10A	-12V/3A	2.5V/3A	MCFGB
3.3V/100A			-12V/3A	1.8V/3A	MCOGA
3.3V/100A			12V/3A	1.8V/3A	MCOFA
3.3V/100A			-12V/3A	-5V/3A	MCOGE
3.3V/100A			-12V/3A	2.5V/3A	MCOGB
3.3V/100A			12V/3A	2.5V/3A	MCOFB
2.5V/70A		12V/10A	-12V/3A	-5V/3A	BOFGE
2.5V/70A		12V/10A	-12V/3A		BOFGO
2.5V/70A		12V/10A		-5V/3A	BOFOE
2.5V/70A		12V/10A	-12V/3A	5V/3A	BOFGD
2.5V/70A		12V/10A	-12V/3A	3.3V/3A	BOFGC
2.5V/70A		12V/10A			BOFOO
2.5V/70A		12V/10A		1.8V/3A	BOFOA
2.5V/70A			12V/3A	-5.2V/3A	BOOFK
2.5V/70A			-12V/3A	-5.2V/3A	BOOGK
2.5V/70A		12V/10A		3.3V/3A	BOFOC
2.5V/70A		5V/10A			BOJOO
2.5V/70A		12V/10A	-12V/3A	-5.2V/3A	BOFGK
2.5V/70A		5V/10A		1.8V/3A	BOJOA
2.5V/70A				-5.2V/3A	BOOOK
1.8V/70A		12V/10A	-12V/3A	-5V/3A	AOFGE
1.8V/70A		12V/10A	-12V/3A		AOFGO
1.8V/70A		12V/10A		-5V/3A	AOFOE
1.8V/70A		12V/10A			AOFOO
1.8V/70A		12V/10A		3.3V/3A	AOFOC
1.8V/70A				5V/3A	AOOOD
1.8V/70A		12V/10A		-5.2V/3A	AOFOK
1.8V/70A		12V/10A		2.5V/3A	AOFOB
1.8V/70A		12V/10A	-12V/3A	3.3V/3A	AOFGC
1.8V/70A				3.3V/3A	AOOOC

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APPLICATION NOTES

1. Maximum power must not exceed the following: 500 watts for V1 and V2 combined, 171 watts for V3, V4 and V5 combined, or 600W for total unit.

2. For units with V1 over 70 amps, that output actually consists of the V1 and V2 outputs in parallel. In this mode the V1 and V2 output pins must be connected to one another and the V1 and V2 current share pins connected to each other. The V1 plus sense and minus sense pins must be connected to the V2 plus sense and minus sense pins, respectively. All connections are external to unit.

3. For outputs of 2.5V or lower, the peak-to-peak ripple and noise is specified at 2% maximum.

4. The DC Power Good signal monitors the V1, V2 and V3 outputs only.

5. **DESCRIPTION and INTERCONNECTION OF LOGIC SIGNALS.** ENABLE, DC POWER GOOD, AC POWER FAIL, OVERTEMP WARNING and INHIBIT pin connections come from the equivalent of an open collector circuit with an internal pull up 10K resistor to +5V.

   ENABLE. This pin must be shorted to ground in order for out puts to function. The connection may also be achieved by means of an external open collector or open FET drain circuit, i.e., when the external transistor is turned on, the power supply is enabled. This is the inverse of the Inhibit function below.

   OUTPUT POWER GOOD. Provides Logic High signal when V1, V2 and V3 reach a prescribed level.

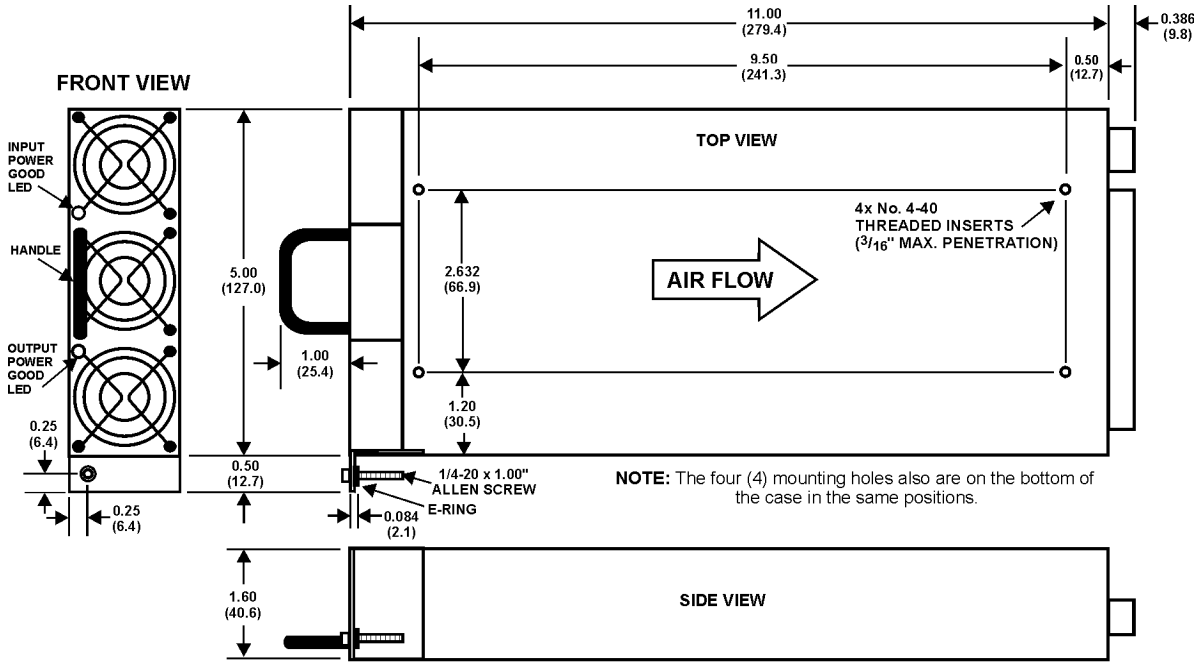
   INPUT POWER FAIL. Provides a Logic High signal pulse when the AC line voltage ceases. Pulse occurs a minimum of 4 milliseconds before outputs go out of regulation. Pulse duration is 4 milliseconds up to tens of milliseconds, depending on load. Signal is Logic High rather than low (typical in non-redundant power supplies) so that there is no signal ambiguity when redundant power supplies are operated from different AC phases.

   OVERTEMP. WARNING. Provides a Logic Low signal when exit air temperature approaches an unacceptable level.

   GLOBAL INHIBIT. Shuts down the outputs but not the standby supply or the fans. As with the Enable pin above, it is achieved by shorting the pin to ground or turning on an external transistor. Should be connected through a 10K ohm resistor to +5V Standby Output. Acts as the inverse of the Enable pin.

6. **CONNECTING ALL OUTPUT SIGNALS TOGETHER FOR UNITS IN AN N+1 RACK:** Normally signals are used for identifying status of each module in paralleled unit configuration. If it is desired to connect all the signals together to treat the complete rack as a single power supply, the following (or equivalent) must be done. The Input Power Fail, Output Power Good and Overtemp. Warning signals of each module are each connected to the anode of a BAV99 diode, the other side of which goes to the base of a 2N2222A. The collectors of all the Input Power Fail transistors are connected to form a single Input Power Fail chassis signal. The same is done for the Output Power Good and Overtemp. Warning signals. The resultant system warning signals then give a Logic Low for Input Power Fail and a Logic High for Output Power Good and Overtemperature Warning.

7. **MTBF.** 200,000 hours at 35°C using Bellcore method.



NOTE: The TPCHS Model is shown. The PCHS version does not have handle or mounting bracket with bolt. The AC input version does not have DC input connector (pins 48-50).

ALL DIMENSIONS IN INCHES (mm).
All specifications subject to change without notice.

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PowerCassette®: I2C SERIAL BUS INTERFACE

Status Indication of system critical power supply parameters

FEATURES

- Industry Standard Communication Interface
- Inventory Control Information
- Status Indication
- Management of System Load
- Imminent Failure Warning
- Fully Integrated with Standard PSU Package



PCH Series
(Chassis Mount)

TPCH Series
(Hot-Swap)

1U HIGH
1.6” x 5” x 10”
(41 x 127 x 254 mm)

www.unipowercorp.com

DESCRIPTION

The I2C interface that is incorporated into the PowerCassette includes facilities to monitor various operating parameters within the unit and transmit these to a host computer on demand over an industry standard I2C Serial bus.

Three forms of data are available. These allow the user to monitor the actual status of an individual unit, manage system loading through measurement of the actual load on each output and also control inventory through an inbuilt EEPROM containing specific data about each individual unit.

The implementation of I2C that has been utilized in PowerCassette is a subset of more complete implementations such as IPMI. This data-sheet is intended as a supplement to the data sheet for the PowerCassette family itself and should provide enough information for the system designer to make decisions on how to utilize the available information within his overall system philosophy.

I2C DEVICES EMPLOYED

PCF8574
This device is an 8-bit digital register manufactured by Philips.

PCF8591
This device is a Quad A/D converter manufactured by Philips.

24C02
This device is a 256 byte EEPROM manufactured by ST

MAX6633
This is a 12-bit temperature measurement device manufactured by Maxim.

For detailed information about the operation of these devices please consult the original manufacturers’ data-sheets.

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SPECIFICATIONS, *PowerCassette*®: I2C SERIAL BUS INTERFACE

ELECTRICAL INTERFACE

Addressing (GA0 and GA1)

Two external address lines are employed allowing up to four PowerCassette modules to be addressed on a single I2C bus.
Module addressing is achieved through hard-wiring the address lines to 0V or the 5V auxiliary supply via a 100R resistor on the system back-plane. In this way it is the location or position of the module rather than any particular module that is identified by an individual address.

Serial Clock (SCLK)

This line is clocked by the processor which controls the I2C serial bus. It should be tied to +5V via a pull-up resistor in the range 3k to 10k.

Serial Data (SDA)

This line is a bidirectional data line. It should be tied to +5V via a pull-up resistor in the range 3k to 10k.

Interrupt

This line provides an interrupt to the processor in the event of a change of status of the digital register.

BUS speed

The I2C interface as used in PowerCassette is designed to run with a serial clock speed 100kHz.

OPERATION AND FUNCTIONS

Digital Functions

Digital status functions are provided by a PCF8574 8-bit I/O port device. When this device is read by the serial bus controller a single 8-bit word provides the following information:

BIT	FUNCTION	GOOD STATE	MEANING
0	Input Power Fail	0	Provides 10ms warning of input supply failure. [1]
1	Output Power Good	1	V1, 2 and 3 are within specified limits.
2	Temperature Warning	1	Internal temperature exceeds 60C.
3	Fan #1 Good	1	Fan running at >80% nominal speed.
4	Fan #2 Good	1	Fan running at >80% nominal speed.
5	Fan #3 Good	1	Fan running at >80% nominal speed.
6	Not Used	1	Logic 1 as default
7	Temperature Alarm	1	Internal temperature exceeds 70C, unit switched off.

Note 1: AC input versions only. Requires use of Interrupt line to provide warning time specified.

PCF8574 slave address

BIT	7	6	5	4	3	2	1	0
VALUE	0	1	0	0	0	A1	A0	R/W

Note: The PCF8574 must only be used in the READ mode.

EEPROM Functions

The EEPROM is a 2048 bit (256 byte) device which is preprogrammed at the factory with the following data:

ADDRESS RANGE	DATA
0-15	Model Number
16-31	Manufacturing Part Number
32-47	Serial Number
48-63	Modification Level
64-79	Manufacturer
80-95	Country of Manufacture
96-111	Configuration
112-255	Not used

Note:
Data is organized such that each field of data can be accessed by a page read (16 bytes).

EEPROM slave address

BIT	7	6	5	4	3	2	1	0
VALUE	1	0	1	0	0	A1	A0	R/W

Note: Customers may specify to special order other data which they may require.

Analogue Functions

Analogue status functions are provided by two PCF8591 4-channel 8-bit A/D converter devices. When these devices are read by the serial bus controller a single 8-bit word provides the following information:

Device: U208				Device: U215			
A/D	FUNCTION	A/D	FUNCTION	A/D	FUNCTION	A/D	FUNCTION
1	V1 voltage	3	V3 voltage	1	V1 current	3	V3 current
2	V2 voltage	4	not used	2	V2 current	4	not used

Slave addresses

BIT	7	6	5	4	3	2	1	0	Device
VALUE	1	0	0	1	1	A1	A0	R/W	U208
VALUE	1	0	0	1	0	A1	A0	R/W	U215

The PCF8591 devices initially require a control byte (04 Hex) to be written to the configuration register. This control byte sets the device so that on each successive read the data from the next A/D is read. Note that on each read a conversion is started for a particular channel and the result will be read from the previous channel, thus the first result from a sequence of reads should always be discarded.

A/D converter scaling

To obtain a correct voltage or current measurement it is necessary to employ both scaling and offset factors in the controlling software. Note that all voltage measurements are made inside the PSU module, before the 'ORing' diodes, and are typically 0.5V higher than the actual module output voltage. The following calculation should be employed:

Value = (byte read x scaling factor) + offset

Output Voltage	Scaling Factor	Tolerance	Output Measured
1.8V	0.012	±2%	**V1, V2 Voltage**
2.5V	0.0147	±2%	**V2 Voltage Only**
3.3V	0.015	±2%	**V1, V2, V3 Voltage**
5.0V	0.023	±2%	**V1, V2, V3 Voltage**
12.0V	0.0547	±2%	**V1, V3 Voltage**
1.8 to 5V	0.35	10%*	**V1, V2 Current**
12V	0.175	10%*	**V1 Current (12V)**
12V	0.05	10%*	**V3 Current**

Temperature Measurement Functions

The internal temperature of the unit is measured using a MAX6633. This device provides a 12-bit measurement at a resolution of 0.0625°C.

MAX6633 slave address

BIT	7	6	5	4	3	2	1	0
VALUE	1	0	0	0	0	A1	A0	0

Note: The MAX6633 must only be used in the READ mode.

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